

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A CMOS imaging device, comprising:

a plurality of photo diodes;

a plurality of photoconductors formed over said plurality of photo diodes, each photoconductor being capable of receiving and propagating light within an interior space of each said photoconductor to at least one of said photo diodes, said interior space defined by the outer surfaces of each said photoconductor; and

at least one fluidic material between each said photoconductor, said at least one fluidic material surrounding at least a lower portion of each of said photoconductors, said at least one fluidic material having a lower refractive index as compared to the refractive index of each said photoconductor.

2. (Original) The CMOS imaging device of claim 1, wherein each said photoconductor receives and propagates light to a single corresponding photo diode.

3. (Original) The CMOS imaging device of claim 1, wherein each said photoconductor comprises a material selected from the group consisting of silicon dioxide and nitride.

4. (Original) The CMOS imaging device of claim 1, wherein each said photoconductor comprises silicon dioxide and nitride.

5. (Original) The CMOS imaging device of claim 1, wherein said outer surfaces of each said photoconductor are selected from the group consisting of substantially straight, substantially diagonal and curved outer surfaces.

6. (Previously presented) A CMOS imaging device, comprising:

a plurality of photo diodes;

a plurality of photoconductors formed over said plurality of photo diodes, each photoconductor being capable of receiving and propagating light within an interior space of each said photoconductor to at least one of said photo diodes, said interior space defined by the outer surfaces of each said photoconductor; and

at least one fluidic material between each said photoconductor, said at least one fluidic material having a lower refractive index as compared to the refractive index of each said photoconductor,

wherein said at least one fluidic material is a gas.

7. (Original) The CMOS imaging device of claim 6, wherein said at least one fluidic material is air.

8. (Original) The CMOS imaging device of claim 1, wherein said at least one fluidic material comprises a non-gaseous fluid.

9. (Original) The CMOS imaging device of claim 1, wherein there is minimal space between the upper portions of each adjacent photoconductor.

10. (Original) The CMOS imaging device of claim 1, wherein the outer perimeter of an upper portion of each said photoconductor comprises at least three substantially straight edges.

11. (Original) The CMOS imaging device of claim 10, wherein said outer perimeter is selected from the group consisting of a polygonal, substantially square,

substantially pentagonal, substantially hexagonal, and substantially octagonal outer perimeter.

12. (Original) The CMOS imaging device of claim 1, wherein a nitride liner is provided around an outer perimeter of each said photoconductor.

13. (Original) The CMOS imaging device of claim 1, wherein the diameter of an upper portion of each said photoconductor is greater than the diameter at the base of each respective photoconductor.

14. (Currently Amended) A CMOS imaging device, comprising:

a semiconductor substrate;

a plurality of photo diodes at or beneath an upper surface of said semiconductor substrate;

a plurality of photoconductors formed over said plurality of photo diodes, each photoconductor being capable of receiving and propagating light within an interior space of each said photoconductor to at least one of said photo diodes, said interior space defined by the outer surfaces of each said photoconductor; and

at least one fluidic material between each said photoconductor, said at least one fluidic material surrounding at least a lower portion of each of said photoconductors, said at least one fluidic material having a lower refractive index as compared to the refractive index of each said photoconductor.

15. (Currently Amended) An image pixel array in a CMOS imaging device, comprising:

a plurality of photoconductors formed over a plurality of photo diodes, said photo diodes formed at or beneath the upper surface of a semiconductor device, each photoconductor being capable of receiving and propagating light within an interior space of each said photoconductor to at least one of said photo diodes, said interior space defined by the outer surfaces of each said photoconductor;

a color filter formed over each said photoconductor; and

at least one fluidic material between each said photoconductor, said at least one fluidic material surrounding at least a lower portion of each of said photoconductors, said at least one fluidic material having a lower refractive index as compared to the refractive index of each said photoconductor.

16. (Original) The image pixel array of claim 15, wherein each said photoconductor receives and propagates light to a single corresponding photo diode.

17. (Original) The image pixel array of claim 15, wherein each said photoconductor comprises a material selected from the group consisting of silicon dioxide and nitride.

18. (Original) The image pixel array of claim 15, wherein each said photoconductor comprises silicon dioxide and nitride.

19. (Original) The image pixel array of claim 15, wherein said outer surfaces of each said photoconductor are selected from the group consisting of substantially straight, substantially diagonal and curved outer surfaces.

20. (Previously presented) An image pixel array in a CMOS imaging device, comprising:

a plurality of photoconductors formed over a plurality of photo diodes, said photo diodes formed at or beneath the upper surface of a semiconductor device, each photoconductor being capable of receiving and propagating light within an interior space of each said photoconductor to at least one of said photo diodes, said interior space defined by the outer surfaces of each said photoconductor;

a color filter formed over each said photoconductor; and

at least one fluidic material between each said photoconductor, said at least one fluidic material having a lower refractive index as compared to the refractive index of each said photoconductor,

wherein said at least one fluidic material is a gas.

21. (Original) The image pixel array of claim 20, wherein said at least one fluidic material is air.

22. (Original) The image pixel array of claim 15, wherein said at least one fluidic material comprises a non-gaseous fluid.

23. (Original) The image pixel array of claim 15, wherein there is minimal space between the upper portions of each adjacent photoconductor.

24. (Original) The image pixel array of claim 15, wherein the outer perimeter of an upper portion of each said photoconductor comprises at least three substantially straight edges.

25. (Original) The image pixel array of claim 24, wherein said outer perimeter is selected from the group consisting of a polygonal, substantially square,

substantially pentagonal, substantially hexagonal, and substantially octagonal outer perimeter.

26. (Original) The image pixel array of claim 15, wherein a nitride liner is provided around an outer perimeter of each said photoconductor.

27. (Original) The image pixel array of claim 15, wherein the diameter of an upper portion of each said photoconductor is greater than the diameter at the base of each respective photoconductor.

Claims 28-62. (Canceled)

63. (Original) A CMOS imager system, comprising:

(i) a processor; and

(ii) a CMOS imaging device coupled to said processor, said CMOS imaging device comprising:

a semiconductor substrate;

a plurality of photo diodes at or beneath an upper surface of said semiconductor substrate;

a plurality of photoconductors formed over said plurality of photo diodes, each photoconductor being capable of receiving and propagating light within an interior space of each said photoconductor to at least one of said photo diodes, said interior space defined by the outer surfaces of each said photoconductor;

a color filter formed over each said photoconductor; and

at least one fluidic material between each said photoconductor, said at least one fluidic material surrounding at least a lower portion of each of said photoconductors, said at least one fluidic material having a lower refractive index as compared to the refractive index of each said photoconductor.

64. (Original) The CMOS imager system of claim 63, wherein each said photoconductor receives and propagates light to a single corresponding photo diode.

65. (Original) The CMOS imager system of claim 63, wherein each said photoconductor comprises a material selected from the group consisting of silicon dioxide and nitride.

66. (Original) The CMOS imager system of claim 63, wherein each said photoconductor comprises silicon dioxide and nitride.

67. (Original) The CMOS imager system of claim 63, wherein the outer surfaces of each said photoconductor are selected from the group consisting of substantially straight, substantially diagonal and curved outer surfaces.

68. (Previously presented) A CMOS imager system, comprising:

(i) a processor; and

(ii) a CMOS imaging device coupled to said processor, said CMOS imaging device comprising:

a semiconductor substrate;

a plurality of photo diodes at or beneath an upper surface of said semiconductor substrate;

a plurality of photoconductors formed over said plurality of photo diodes, each photoconductor being capable of receiving and propagating light within an interior space of each said photoconductor to at least one of said photo diodes, said interior space defined by the outer surfaces of each said photoconductor;

a color filter formed over each said photoconductor; and

at least one fluidic material between each said photoconductor, said at least one fluidic material having a lower refractive index as compared to the refractive index of each said photoconductor,

wherein said at least one fluidic material is a gas.

69. (Original) The CMOS imager system of claim 68, wherein said at least one fluidic material is air.

70. (Original) The CMOS imager system of claim 63, wherein said at least one fluidic material comprises a non-gaseous fluid.

71. (Original) The CMOS imager system of claim 63, wherein there is minimal space between the upper portions of each adjacent photoconductor.

72. (Original) The CMOS imager system of claim 63, wherein the outer perimeter of an upper portion of each said photoconductor comprises at least three substantially straight edges.

73. (Original) The CMOS imager system of claim 72, wherein said outer perimeter is selected from the group consisting of a polygonal, substantially square, substantially pentagonal, substantially hexagonal, and substantially octagonal outer perimeter.

74. (Original) The CMOS imager system of claim 63, wherein a nitride liner is provided around an outer perimeter of each said photoconductor.

75. (Original) The CMOS imager system of claim 63, wherein the diameter of an upper portion of each said photoconductor is greater than the diameter at the base of each respective photoconductor.